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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/751,228	12/30/2003	Dirk de Roover	SCSO0001	1181

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GLENN PATENT GROUP  
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EXAMINER
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BAHTA, KIDEST

ART UNIT	PAPER NUMBER
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2125

DATE MAILED: 03/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/751,228	ROOVER ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Kidest Bahta	2125	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☒ Claim(s) 10-37 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bode et al. (U.S. Patent 6,741,903) in view of Saka et al. (U.S. Patent 6,798,529).

Regarding claims 1-9, Bode discloses in a model-based chemical-mechanical planarization (CMP) controller, the model comprising a dynamic mathematical model of a CMP system to be controlled (column 14, lines 44-67), the mathematical model comprising any of a physics-based model, an empirical model and any combination (Fig. 14) thereof the mathematical model produced by open-loop and closed-loop techniques (Fig. 1); a reduced mathematical model for CMP system control (column 7, lines 57-column 8, line 10).

Bode fails to disclose Saka discloses that computer simulation means for evaluating the mathematical model and means for validating the mathematical model using data from the CMP system, mathematical model comprising any of a removal rate model of a CMP system; evaluating the CMP system with the mathematical model via computer simulation prior to any CMP system modifications.

However; Saka discloses that computer simulation means for evaluating (Fig. 17-18, 21 and 32) the mathematical model and means for validating the mathematical model using data from the CMP system (Fig. 29), mathematical model comprising any

Art Unit: 2125

of a removal rate model of a CMP system (column 8, lines 20-40); evaluating the CMP system with the mathematical model via computer simulation prior to any CMP system modifications (Fig. 14, step 1440).

It would have been obvious to a person of ordinary skill in the art at the time of invention was made to modify the teachings of Bode with the teachings of Saka in order to provide a method and apparatus which continuously monitors the polishing progress at different areas of the wafer, and may also be used to determine the end point for removal of material from the surface of the wafer.

***Allowable Subject Matter***

3. Claims 10-37 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

The allowability of the independent claim 10 and 15 resides, at least in part, in that closest prior art of record Bode (U. S. Patent 6,741,903) does not disclose or suggest, alone or in combination, providing an integrated model-based pressure-temperature-velocity-slurry flow control system comprising real-time mode identification, real-time gain estimation, and real-time control, the model comprising a plurality of component models of the CMP system, the control system processing in-situ data from a plurality of real-time sensors in the CMP system, in combination with the other elements and features of the claimed invention, in combination with the other elements and features of the claimed invention.

Art Unit: 2125

The allowability of the independent claim 10 and 15 resides, at least in part, in that closest prior art of record Bode (U. S. Patent 6,741,903) does not disclose or suggest, alone or in combination, a pressure profile control module for controlling individual zone pressures for a multi-zone pressure CMP process to provide in-situ pressure feedback using in-situ wafer thickness measurements, as obtained with an in-situ thickness sensor, to adjust pressures in-site a slurry flow control module for controlling slurry flow to the CMP system; a motor velocity control module, in combination with the other elements and features of the claimed invention.

### ***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
5. Any inquiry concerning communication or earlier communication from the examiner should be directed to Kidest Bahta, whose telephone number is (571) 272-3737. If attempts to reach the examiner by phone fail, the examiner's supervisor, Leo Picard, can be reached (571) 272-3749. Additionally, the fax numbers for Art Unit 2125 are (703) 746-7238 for after final, (703) 746-7239 for Official and Non-Official /Draft (703) 746-7240. Any inquiry of a general nature or relating to the status of this application should be directed to the group receptionist at (703) 305-9600.

Kidest Bahta



March 14, 2005